UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/392,626	09/09/1999	SHIN MOGI	35.C13816	1507

5514 7590 08/12/2004

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
PHAM, HAI CHI	

ART UNIT	PAPER NUMBER
2861	

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/392,626	MOGI ET AL.	
	Examiner	Art Unit	
	Hai C Pham	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *27 and 29-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27 and 29-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FINAL REJECTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 27, 29-30, 32, 35-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomita (JP 9-329754).

Tomita discloses a multi-beam scanning device comprising a light source unit (Fig. 4) comprising a laser light source (semiconductor laser light source 25 of Figs. 1-2 or 31 of Figs. 3-4) and a driving circuit board (electrical circuit substrate 26, Fig. 2) for driving said laser light source, said laser light source including a laser chip having a plurality of emission points (semiconductor laser chip 31 with two or more light emission points 31 a and 31b) (Fig. 4) (English translation, paragraphs [0016] and [0017]) for emitting laser beams and a terminal (as shown in Fig. 1) for energizing the laser chip, said driving circuit board being connected to the terminal of said laser light source (the electrical circuit substrate 26 containing all the electronics necessary for driving the laser source 31 similar to the circuit shown in Fig. 7 based on the signals provided via the cable 16, which also transmits the necessary power supply) and having a longitudinal edge (the electrical circuit substrate 26 having a horizontal longitudinal edge, as shown in Fig. 1), scanning means (polygon mirror 3) for scanning a surface (of

the drum 5) to be scanned with the laser beams emitted by said light source unit, and a housing (optical box 21) having a wall wherein said housing contains said scanning means and supports said light source unit on the wall (Fig. 1), and wherein the terminal of said laser light source (31) is fixed to said driving circuit board (26) such that a straight line passing the plurality of emission points of said laser light source is inclined with respect to the longitudinal edge of said driving circuit board (to adjust the scanning line spacing, the multi-beam laser source 31 is rotated without rotating the driving substrate 26 such that the line joining the light emitting points 31b forms an angle with the horizontal line) (Fig. 4). It is noted that paragraph [0018] further affirms the above statement of the inclination of the line intercepting the light emitting points with respect to the horizontal line by defining the distance r as being the distance between the imaginary line L and the *nearest* light emitting point. Tomita further discloses the longitudinal edge of said driving circuit board (26) being arranged substantially in parallel with the longitudinal edge of the wall of said housing (21) to which the driving circuit board is fixed by screws (27) (paragraph [0012]) (Fig. 1).

With regard to claim 29, Tomita teaches the driving circuit board (26) having a substantially rectangular shape (Figs. 1 and 2).

With regard to claim 30, Tomita teaches the light source unit comprising a holder (22) holding the laser light source (paragraph [0017]).

With regard to claim 32, Tomita teaches the plurality of emissions points (31a and 31b) of the laser light source being arranged linearly (Fig. 4).

With regard to claim 35, Tomita teaches the laser light source being a multi-beam semiconductor laser.

With regard to claim 36, Tomita also discloses the scanning means comprising a rotary polygon mirror (3) for deflecting the laser beams emitted by said light source unit and an imaging lens (4) for focusing the laser beams deflected by said rotary polygon mirror.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita in view of Aoki (U.S. 5,408,493).

Tomita discloses all the basic limitations of the claimed invention except for the laser array being fixed with an inclination with respect to a reference surface of the laser holder.

However, Aoki discloses a laser scanning apparatus in which the laser (6, Fig. 4B) has an angle-adjusting holder (12) for adjusting an inclination angle with respect to the fixed plate (11) to obtain a desired point image position on the surface to be scanned.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Tomita with the aforementioned teaching of Aoki. Doing so would allow the adjustment of the optical path of the laser beam to produce an image point at a desired position on the surface to be scanned.

5. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita in view of Nakajima et al. (U.S. 5,999,345).

Tomita discloses all the basic limitations of the claimed invention except for the multi-beam semiconductor laser having a plurality of two-dimensionally arrayed emission points.

However, it is well known in the art that the selection of one-dimensional or two-dimensional array lasers in an optical scanning device would be a matter of design choice to fit a specific requirement. Nakajima et al., for example, discloses a laser holder that can support a one-dimensional or two-dimensional laser array while allowing the adjustment of the distance between the multiple laser beams (Figs. 1, 3, 5 and 6).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the laser holder of Tomita to hold a plurality of two-dimensional laser arrays as taught by Nakajima et al. Doing so would allow to increase the printing speed of the laser printer. Moreover, the implementation of such laser holder would involve only routine skill in the art.

6. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita in view of Asami (JP 10-10447).

Tomita discloses all the basic limitations of the claimed invention including a collimator lens (23) for collimating the laser beams emitted from said laser light source and a lens barrel (24) holding said collimator lens, said lens barrel being supported by the holder (22) but thus fails to teach the lens barrel and the holder being an integral part.

Asami discloses in Fig. 2 a light source unit (12) provided with a holder (21) fixed to the optical box (11) of the multi-beam scanning device, and a lens barrel (24) with built-in collimator lens (8), wherein the holder and the lens barrel form an integral part.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provided the lens barrel as an integrated part with the laser source holder as taught by Asami in the device of Tomita. By doing so, the laser source unit would be highly accurately held and positioned with respect to the collimator lens without having to adjust the optical axis of the laser beams with respect to the collimator lens.

Response to Arguments

7. Applicant's arguments filed 06/22/04 have been fully considered but they are not persuasive.

Applicants argue that Tomita "fail to disclose or suggest at least the features of (a) a laser light source having a terminal fixed to a driving circuit board such that (b) a

straight line passing a plurality of emissions points of the laser light source is inclined with respect to a longitudinal edge of the driving circuit board, and (c) the longitudinal edge of the driving circuit board being arranged substantially in parallel with a longitudinal edge of a wall of the housing. The examiner respectfully disagrees. In fact, Tomita clearly teaches:

(a) a semiconductor laser light source (25 or 31) having terminal (as shown in Fig. 1), and an electrical circuit substrate (26) for driving the semiconductor laser light source, whose terminal is necessary (if not inherently) in connection with the electrical circuit substrate, an equivalent configuration of such electrical circuit substrate is shown in Fig. 7 as a printed circuit board provided with electronics for driving the semiconductor laser light source;

(b) the semiconductor laser light source (31) having a plurality of light emission points (31b) and being configured such that the laser light source can be rotated (in the direction of arrow B) to adjust the distance between the laser beams from a distance t1 defined as the distance between the two light emission points already arranged inclined with respect to the horizontal line to a smaller distance t2 where the two light emission points are still arranged inclined with respect to the horizontal line, for a higher resolution set up. In other words, the two light emission points (31b, 31b) are arranged inclined with respect to the horizontal line, and thus inclined with respect to the longitudinal edge of the driving circuit board. Moreover, the inclination of the two light emission points with respect to the longitudinal edge of the driving circuit board is further expressly indicated in paragraph [0018], where a distance r is defined as the

distance between the imaginary line L (parallel to the horizontal direction) to the nearest one of the two light emissions points;

(c) the longitudinal edge of the driving circuit board (26) being always arranged substantially in parallel with a longitudinal edge of a wall of the housing (or optical box 21) (Figs. 1, 2).

It is understood that the machine-translated English version of Tomita Reference has obvious typographical errors and may lead to confused interpretation as expressed by the Applicants in the statement "Applicants do not understand Tomita to suggest a relationship concerning the orientation of the driving circuit board" and "that a distance r' in the Y direction between an imaginary line L passing the center of connector [2]9 and light emitting point 31a or 31b". Tomita discloses an added feature related to the connector (29), which may affect the adjusted inclination of the light emitting points (31a, 31b) during the installation/removal of the cable (30) with a force F. To prevent this to happen, the moment created by the force F is required to be lower than 3 Kgf.cm defined by the expression $F \cdot r \leq 3$, where r is defined as the distance between the imaginary line L (parallel to the horizontal direction Y) to the nearest one of the two light emissions points.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HAI PHAM
PRIMARY EXAMINER
August 11, 2004